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HEPATITIS A IN RESTAURANT CLIENTELE AND STAFF – QUEBEC

Introduction

A case of hepatitis A reported in a foodhandler working in a public place demands public-health intervention to protect fellow workers and customers from contracting the disease. The following is a report of an outbreak of hepatitis A that began with a foodhandler and subsequently involved several regular customers of a restaurant located in the *Direction de la santé publique de la Montérégie* (DSP-M) area. This outbreak comments on certain aspects of the public-health intervention measures that were used to prevent the transmission of the disease.

Description of the outbreak

On 12 January 1996, a restaurant employee notified the DSP-M about several cases of jaundice in her workplace. Upon investigation, five individuals – the two owners of the restaurant and three customers – were found to have had hepatitis A during the previous 6 weeks. Two other customers developed the disease during the weeks following notification to the DSP-M (Table 1).

At the time of the investigation, the owners of the restaurant – a homosexual couple – had operated the establishment, located in a small town with a population of 2,500, for 11 months. Hot food (pizza, submarines, brochette) and salads were on the menu; no shellfish was served. The restaurant had approximately 50 customers who ate there almost on a daily basis.

Case Descriptions

Case 1: A 23-year-old homosexual male and co-owner of the restaurant, who worked there as a cook on a regular basis, had a fever on 30 November 1995. On 10 December, he developed jaundice. He was hospitalized from 10 to 13 December. Blood samples revealed an increase in transaminase levels, and serology was positive for anti-HAV IgM on 11 December. At the time of the investigation, on 12 January 1996, the man indicated that he had handled food several times during the week prior to 10 December and also during the evening of 13 December.

Case 2: A 41-year-old male, the homosexual partner of Case 1 and co-owner of the restaurant, who was also a truck driver, experienced a fever and malaise on 20 December 1995. On 27 December, he developed jaundice. Blood samples taken on 30 December showed an increase in transminase levels, and serology was positive for anti-HAV IgM. This case ate at the restaurant every day and occasionally worked as a cook. He had worked very little during the infectious period; however, he did work on days 12 and 13 following the first sign of his symptoms. During these 2 days, he poured gravy onto plates and carried the plates from the kitchen to the waitress. He denied having had any direct contact with the food.

Case 3: A 49-year-old male fireman from a neighbouring town, who had eaten breakfast and a snack every couple of days for a number of months at the restaurant, suffered from fatigue, fever, and vomiting on 28 December 1995. He developed jaundice on 3 January 1996 and was subsequently hospitalized for 7 days. Blood samples indicated an increase in transaminase levels, and serology was positive for anti-HAV IgM on 2 January 1996.

Case 4: A 44-year-old housewife, who ate breakfast daily at the restaurant, experienced symptoms on 31 December 1995. She developed jaundice on 9 January 1996. She was hospitalized for 2 days. Serology was positive for anti-HAV IgM on 10 January 1996.

Case 5: A 49-year-old male, slightly mentally challenged who worked in a garage as mechanic's assistant, also worked in the restaurant on an informal, irregular basis. He helped with the garbage and did odd jobs but never handled the food. He ate breakfast and lunch daily at the restaurant. On 4 January 1996, he experienced fatigue. On 11 January, he developed jaundice and was hospitalized for 3 days. Blood samples indicated an increase in transaminase levels, and serology was positive for anti-HAV IgM on 11 January.

Case 6: A 29-year-old male, who ate two or three meals at the restaurant daily, experienced stomach pain and nausea on 17 January 1996; he also noticed that his urine was dark. He

TABLE 1
Epidemiologic information on cases of hepatitis A in restaurant clientele and staff, Quebec, November 1995 to February 1996

No	Age/Sex	Occupation	DOS* day/month	DOJ** day/month	Delay of Onset (Day)***	Epidemiologic Link
1	23/M	Cook	30/11	10/12	0	Index case
2	41/M	Truck Driver	20/12	27/12	17	Sexual partner of Case 1
3	49/M	Fireman	28/12	03/01	24	Regular restaurant customer
4	44/F	Housewife	31/12	09/01	30	Regular restaurant customer
5	49/M	Laborer	04/01	11/01	32	Regular restaurant customer
6	29/M	Butcher	17/01	22/01	43	Regular restaurant customer
7	31/F	Office Clerk	05/02	06/02	58	Sexual partner of Case 6 and occasional restaurant customer

* DOS = Date of onset of symptom
** DOJ = Date of onset of jaundice
*** Difference between DOJ of case and DOJ of index case

developed jaundice on 22 January. Two days later he went to the emergency department, but was not hospitalized. Blood samples indicated an increase in transaminase levels, and serology was positive for anti-HAV IgM.

This man worked as a butcher in a grocery store located in the same town as the restaurant. He prepared various cuts of meat and also worked in the delicatessen section. He worked from the 15 to 18 January and on 20 January. Five other employees worked in this grocery store and all handled delicatessen products, either for customers or for themselves.

Case 7: A 31-year-old female, the sexual partner of case 6, was an occasional customer at the restaurant. Her symptoms began on 5 February 1996; the next day she developed jaundice.

All of the cases denied having had new sexual partners in the preceding 2 months. None had travelled outside of the country, nor had been in contact with travellers from countries where hepatitis A is endemic. None had eaten shellfish. They all denied using drugs. An investigation of other possible causes of acute hepatitis was negative in all cases. Hepatitis B surface antigen and antibody to hepatitis C tests were negative for Cases 1 to 6; these tests were not performed for Case 7.

Intervention

Following the report of the outbreak on 12 January 1996 and an investigation of each case, staff from the DSP-M proceeded to administer immunoprophylaxis to those persons who were in close contact with each case. They also emphasized the use of more stringent hygienic measures and a close supervision of any new cases.

Initially, immune globulin was offered to all family members and sexual contacts of each case, and to all employees of the restaurant (seven in number) where Case 1 worked and of the grocery store (five in number) where Case 6 worked.

Immune globulin was not offered to restaurant customers. There was a delay in reporting the outbreak, and there is a 14-day window period within which immune globulin must be administered to be effective. Therefore, at the time of the initial report, the administration of immune globulin would have been justified only if there had been evidence of a potential transmission of the disease from Case 2 who had worked 1 and 2 January. In fact, it seems that this person handled very few dishes during this period. Moreover, this person seemed to have adhered to stringent hygienic measures.

The use of hygienic measures was reinforced by the Quebec Department of Agriculture, Fisheries and Food (MAPAQ), and by the DSP-M. On 16 January 1996, DSP-M staff went to the restaurant to inspect the premises and to instruct employees on appropriate hygienic procedures to be used. On 18 January, a MAPAQ representative inspected the restaurant, and took water and food samples. On 26 January, a MAPAQ representative visited the grocery store where Case 6 was working, and took water and food samples. A second visit was made to each establishment to explain the laboratory results on the samples and to implement any required corrective measures.

During the initial visit to these two locations, the MAPAQ representative stated that hygienic procedures were being followed fairly well. The laboratory results on the water and food samples were negative; however, a high bacterial count was indicated for samples of raw vegetables taken at the restaurant. Because of the delay, no leftover food prepared during the infectious period of the index case was available for sampling.

Finally, a letter was sent to all the doctors in the region for information on any other new cases of hepatitis A. A chart review of all hepatitis A cases reported to the DSP-M between September 1995 and May 1996 did not show any other case with an epidemiologic link to this particular outbreak.

Results

The periods marked for epidemiologic link analyses were as follows: 14 days before and 7 days after the onset of jaundice for the infectious period, and from 15 to 50 days for the incubation period.

Cases 1 and 2 both worked from 23 November to 10 December during the infectious period of Case 1; Case 1 also worked 13 and 14 December 1995, and Case 2 on 1 and 2 January 1996. Figure 1 shows the epidemic curve of the outbreak. Based on this information, Cases 2, 3, 4, and 5 were most probably linked to Case 1, either by means of sexual contact (Case 2) or by the ingestion of contaminated food (Cases 3, 4, and 5). Case 6 could be linked to Cases 1 and 2 by means of contaminated food. Case 7 could have been infected through sexual contact with Case 6 or the

ingestion of contaminated food from case 2. Actually, Cases 6 and 7 had breakfast at the restaurant on 2 January when Case 2 was working as a waiter during his infectious period. However, as previously stated, Case 2 denied having had any contact with the food.

The four customers who ate from one to three meals, 2 to 7 days a week at the restaurant, represented between 5% and 10% of the regular clientele. Case 7 was considered as an occasional customer because she ate at the restaurant only once or twice a week. The breakfast meal was common among all seven cases; others also ate lunch or dinner. No attempt was made to trace the food intake history of each case.

Discussion

Hepatitis A is a viral disease transmitted mainly from person to person by the fecal-oral route. When an outbreak occurs, contaminated water and food are the principal modes of transmission. Food can become contaminated by an infected foodhandler.

Cases of hepatitis A are reported in foodhandlers. However, secondary cases and outbreaks are rarely reported. In the United States, 7% of reported cases of hepatitis A[1], approximately 1,000 annually, are found in foodhandlers; between 7 and 12 reported outbreaks each year are caused by food contamination[2]. In Montérégie, a region with a population of more than 1.3 million, there has been approximately one case of hepatitis A reported per year in a foodhandler during the past 3 years. These figures, no doubt, underestimate the true situation because they are based on only those cases reported where the profession of an infected person is indicated.

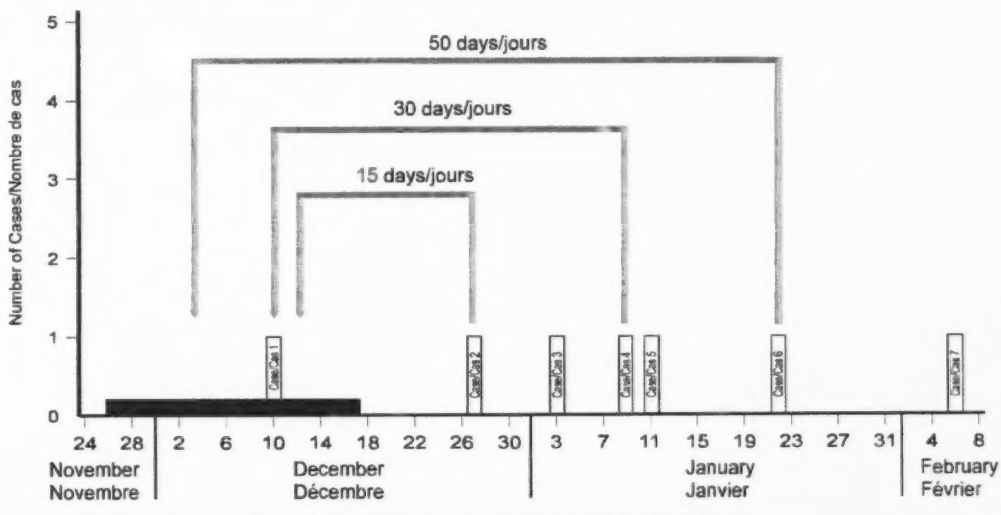
The United States Centers for Disease Control and Prevention (CDC) recommended in 1996 that, when a case of hepatitis A has been reported in a person who handles food, immune globulin should be offered to any other foodhandlers, but it should not be routinely offered to customers[3]. However, according to CDC, immune globulin could be given to customers under the following three conditions.

1. The infected person has been directly involved in the handling of food that will be consumed without further cooking.
2. The foodhandler was not using appropriate foodhandling procedures.
3. The customers can be reached and treated within 2 weeks of their last contact with the infection.

Finally, CDC mentioned that in situations where there has been repeated exposure, in an institutional cafeteria for example, more liberal use of immune globulin would be considered.

There are several comments to be made about the public-health intervention used in this particular outbreak. Although the restaurant staff appeared to use adequate hygienic procedures, a high incidence of hepatitis A did occur among the regular customers. The decision to administer immune globulin to contacts at risk for the disease in the restaurant should be based on the following two conditions: first, the potential risk of transmission posed by these individuals; and second, the number of contaminated meals consumed by these same individuals.

Figure 1
Epidemic curve: cases of hepatitis A in restaurant clientele and staff by date of onset of jaundice, Quebec, November 1995 to February 1996
Courbe épidémique : cas d'hépatite A chez des clients et des employés d'un restaurant selon la date d'apparition de l'ictère, Québec, novembre 1995 à février 1996



Consequently, the restaurant contacts could be grouped into the following three risk categories:

1. employees handling food;
2. other employees and regular customers; and
3. occasional customers.

The literature indicates that other employees handling food at the same location as the index case are at increased risk for acquiring hepatitis A[4-8] and are also a potential source for transmitting the disease[1,3,4]. Occasional customers, however, present a low risk except in unusual circumstances. The same literature is not as clear for employees who have no direct contact with food or for regular customers. These two groups appear to have a similar degree of risk for acquiring the disease. However, in some instances, immune globulin will be given to restaurant employees and not to regular customers.

This classification into three risk categories is valid as long as a relationship between the number of meals consumed that were prepared by an infected foodhandler during the infectious period of the disease and the risk of acquiring it can be established. However, current literature does not confirm that such a relationship exists.

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Editorial Comment

Persons eating food contaminated with hepatitis A virus are at risk of acquiring this infection, e.g. contaminated strawberries in Michigan[1]. Historically, there have been few reported instances of hepatitis A virus transmission related to a commercial foodhandler in Canada. However, there have been several recent reports of such transmission, e.g. the above outbreak, an outbreak in Montreal[2], and the recent report of cases related to a restaurant in Vancouver[3].

The use of immune globulin (IG) prophylaxis among other foodhandlers and patrons when a case of hepatitis A infection is found in a foodhandler is not specifically addressed in the current recommendations from the National Advisory Committee on Immunization (NACI)[4,5]. As stated in the above report, the United States Advisory Committee on Immunization Practices (ACIP) recommends such use of IG under specific circumstances[6], i.e. if the foodhandler, while infectious, handled foods that were not subsequently cooked and had diarrhea or poor hygienic practices, and patrons can be identified and treated within 2 weeks after exposure. ACIP also mentions that stronger consideration for the use of IG may be warranted in settings where repeated exposures may have occurred, e.g. institutional cafeteria. Regular customers in the above report may fall into this category.

An important point to note in the above report is that there was a substantial delay in reporting these cases to the local public-health department, i.e. the index foodhandler case was diagnosed on 11 December 1995 but the public-health department was not informed until 12 January 1996. Given that secondary cases, likely from food contaminated by the index foodhandler case, had already occurred, the period for useful intervention among other foodhandlers and patrons was missed.

The place of hepatitis A vaccination of foodhandlers in the prevention of hepatitis A virus transmission in food establishments is not clear. At this time, NACI states "it has not been determined if vaccination of foodhandlers would be effective in reducing foodborne outbreaks"[7].

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Announcement

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